



# Population Growth With Food Supply

By: Ken Mei

# Introduction

The world population grows as time passes and as it increase the demand for food also increase. The more people there are, especially in poor countries with limited amounts of land and water, the fewer resources there are to meet basic needs. If basic needs cannot be met, development stalls and economies begin to unravel.

Poor countries attempts to increase food production and consumption are undermined by rapid population growth.

- Migration from rural to urban areas
- Unequal land distribution
- Shrinking household
- Deepening rural poverty
- Land degradation



# Problem/Issue



Population  
growth



Overpopulation



Starvation  
and malnutrition



# Important Equations and Formulas + Definitions of the formulas

Logistic Differential Equation:

$$\frac{dP}{dt} = rP \left( 1 - \frac{P}{K} \right)$$

- Let  $r$  be a real number that represents the growth rate
- The function  $P(t)$  represents the population of this organism as a function of time  $t$
- Constant  $P_0$  represents initial population at time  $t = 0$



# Example Question



# Source

- [https://math.libretexts.org/Bookshelves/Calculus/Calculus \(OpenStax\)/08%3A Introduction to Differential Equations/8.04%3A The Logistic Equation](https://math.libretexts.org/Bookshelves/Calculus/Calculus_(OpenStax)/08%3A_Introduction_to_Differential_Equations/8.04%3A_The_Logistic_Equation)
- <https://www.fao.org/3/u3550t/u3550t02.htm#:~:text=The%20more%20people%20the re%20are,and%20economies%20begin%20to%20unravel>